Objective Assessment of Quality of Services for (QoS) for Cellular Mobile (Wireless) Service Providers

Orissa Circle

Report: January – February – March, 2012

Prepared for: **Telecom Regulatory Authority of India**

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A specialist unit of IMRB International

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Preface

TRAI, the regulatory watch dog for the Quality of Service for the telecom services – Basic (Wireline), Cellular Mobile (Wireless) and Broadband has commissioned this study with the objective of measuring Quality of Services under the parameters as per the published notifications.

The Audit module would assess the Quality of Service of telecom operators Basic (Wireline), Cellular Mobile (Wireless) and Broadband services) by auditing the service level records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI.

The Audit module for various circles within the Zones, due the sheer scale of data collection, has been distributed across various quarterly periods. IMRB International Auditors carried out Audits across Orissa, Bihar & Jharkhand, West Bengal, North-East, Assam and Kolkata circles. **This report details the performance of various service providers in Orissa circle against Quality of Services benchmarks for various parameters laid down by TRAI in respective regulations for Cellular (Mobile) services.**

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1.0 **Background**

The Telecom Regulatory Authority of India (TRAI) has a critical mandate to protect the interest of telecom consumers in addition to various other functions bestowed upon it. As part of the license conditions to telecom operators, it has the power and authority to measure the Quality of Service provided by various govt. (BSNL & MTNL) and private telecom operators. The parameters that need to be measured for Basic (Wireline) and Cellular Mobile (Wireless) services have been specified in the TRAI notification on Quality of Services of Basic (Wireline) and Cellular Mobile (Wireless) services dated 20th March, 2009. The parameters for Broadband Service have been specified in the TRAI notification for Quality of Services of Broadband Service Regulation, 2006

Audit module: To assess the quality of service of telecom operators Basic (Wireline), Cellular Mobile (Wireless) and Broadband services by auditing the service level records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI

This report highlights the findings for the Audit module for Orissa circle that was covered in period of January - March 2012. The verification of records maintained by various operators of Cellular Mobile (Wireless) service was undertaken by the auditors of IMRB International during the period Jan-Mar 2012.

> *This report highlights the Audit Module findings for Orissa circle for Cellular Mobile services*

2.0 Objectives and Methodology

The primary objective of the Audit module is to Audit and Assess the Quality of Services being rendered by Basic (Wireline), Cellular Mobile (Wireless), and Broadband service against the parameters notified by TRAI. (The parameters of Quality of Services (QoS) have been specified by in the respective regulations published by TRAI). Following are the key activities undertaken by Auditors during the Audit process conducted at the operator's premises

All Network related and Non network related parameters notified by TRAI in various regulations were Audited

1. **Verification of the data submitted by service providers:** This involved verification of the quarterly Performance Monitoring Reports (PMR's) and monthly Point of Interconnect (POI) Congestion reports being submitted by various service providers. The raw data in the records maintained by service providers was audited to assess the book keeping methodology.

2. **Live measurement for three days:** Network performance of service providers was assessed for three days in the month in which the Audit was carried out. Live figures from the server/ NMS software were recorded for various network related parameters.

3. **Data verification for the month in which Audits were carried out:** Subsequent to the visits for Audit during the live measurement at various Exchanges/ISP Nodes/Exchanges, data for all the network and Non network related parameters was collected from various service providers for the complete month in which the Audit was carried out. Raw data/records pertaining to these were also verified on sample basis to check the veracity of data provided by the operators.

4. **Drive tests:** Operator assisted drive test were conducted in three cities as per the norms stated in the tender.

5. **Live calling:** Live testing was done on a sample basis to check efficiency of various parameters

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- Any changes or discrepancies found in the methodology were reported to the service providers and changes were suggested by IMRB Auditors.
- PMR verification was done as per the new parameters being reported to TRAI by all operators.
- Live measurement and 1 month data collection was done as per the new regulations published by TRAI on 20th March, 2009.
- Separate formats were designed each for Basic (Wireline), Cellular mobile (Wireless) and Broadband services to collect the information on various parameters

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3.0 Sampling methodology

3.1 Sampling for Cellular Mobile (Wireless) service providers

Data pertaining to 100% of the Gateway MSC's (GMSC's) and Mobile Switching Centers (MSC's) of all the Cellular Mobile Service Providers or Unified Access Service Providers (UASP) was collected and verified in specified circles/service areas. Following are the various operators covered in Orissa circle

	Name of Operator	Month of Audit
Operator 1	Idea	January, 2012
Operator 2	BSNL	January, 2012
Operator 3	Reliance CDMA	January, 2012
Operator 4	Reliance GSM	January, 2012
Operator 5	MTS	January, 2012
Operator 6	Airtel	January, 2012
Operator 7	Videocon	January, 2012
Operator 8	S Tel	January, 2012
Operator 9	Uninor	January, 2012
Operator 10	Vodafone	January, 2012
Operator 11	Tata Tele - CDMA	January, 2012
Operator 12	Tata Docomo GSM	January, 2012
Operator 13	Aircel	January, 2012
Operator 14	Loop	January, 2012

4.0 Audit methodology

4.1 Cellular Mobile Services

In a nutshell the following activities were done while auditing for various parameters for Cellular Mobile Services:

S.no	Parameter	AS REPORTED IN PMR	AS FOUND IN ACTUAL RECORDS AFTER VERIFICATION	AS FOUND IN VERIFICATION FOR THE MONTH OF AUDIT	AS FOUND IN 3 DAY LIVE MEASUREMENT DATA	LIVE CALLING	OPERATOR ASSISSTED DRIVE TESTS	INDEPENDENT DRIVE TESTS
A	**Network Performance**							
A (i)	BTS accumulated down time	Yes	Yes	Yes				
A (ii)	Call setup success rate (within licensee own network)	Yes	Yes	Yes	Yes		Yes	Yes
A (iii)	Blocked Call Rate	Yes	Yes	Yes	Yes		Yes	Yes
A (iv)	Call Drop rate	Yes	Yes	Yes	Yes		Yes	Yes
A (v)	% Connections with good voice quality	Yes	Yes	Yes			Yes	Yes
A (vi)	Service Coverage	Yes	Yes	Yes			Yes	Yes
A (vii)	PoI Congestion	Yes	Yes	Yes				
B	**Customer Helpline**							
B (i)	Response time to the customer for assistance	Yes	Yes	Yes		Yes		
C	**Billing Complaints**							
C (i)	Billing complaints per 100 bills issued	Yes	Yes	Yes				
C (ii)	%age of billing complaints resolved within 4 weeks	Yes	Yes	Yes		Yes		
C (iii)	Period of all refunds/payments due to customers from date of resolution as in (ii) above	Yes	Yes	Yes		Yes		

5.0 Executive Summary

The objective assessment of Quality of Services (QoS) was carried out by IMRB International for all the Cellular mobile service providers during the period starting from January 2012 to March 2012 in Orissa circle. The executive summary encapsulates the key findings of the Audit by providing: -

- ▪ *"Service provider performance report"* for Cellular mobile service , which gives a glimpse of the performance of various operators against the benchmark specified by TRAI, during the month in which the Audit was carried out by IMRB Auditors

- ▪ *"Parameter wise critical findings"* for Cellular mobile services: This indicates key observations and findings from different activities carried out during the Audit process

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5.1 Service provider performance report based on one month data verification: Cellular Mobile Services

Name of Service Provider	Time Consistent Busy Hour (TCBH)	Network Availability					Connection Establishment (Accessibility)			Connection Maintenance (Retainability)					POI		Network Traffic Capacity and Utilization		
		Total no. of BTSs in the licensed service area	Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month	BTSs Accumulated downtime (not available for service) (%age)	No. of BTSs having accumulated downtime of >24 hours in a month	Worst affected BTSs due to downtime (%age)	Call Set-up Success Rate (within licensee's own network)	SDCCH/ Paging Chl. Congestion (%age)	TCH Congestion (%age)	Call Drop Rate (%age)	Total No. of cells exceeding 3% TCH drop (call drop)	Total no. of cells in the network	Worst affected cells having more than 3% TCH drop (call drop) rate (%age)	%age of connection with good voice quality	POI Congestion (No. of POIs not meeting the benchmark)	Total number of working POI Service Area wise	Equipped Capacity of Network in respect of Traffic in erlang	Total traffic handled in TCBH in erlang	Total no. of customers served (as per VLR) on last day of the month
Benchmark				≤ 2%		≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%			≤ 5%	≥ 95%	≤ 0.5%				
Idea	19:00 - 20:00	1140	2562	0.30%	22	1.93%	98.55%	0.05%	0.34%	0.56%	2683	105648	2.54%	97.09%	0	64	29075	18591	626545
BSNL	19:00 - 20:00	1987	11798	0.80%	17	0.86%	98.31%	0.94%	1.69%	1.19%	26	938	2.77%	97.00%	0	17	16000	15953	408126
Reliance CDMA	19:00 - 20:00	735	2052	0.38%	0	0.00%	99.53%	0.00%	0.02%	0.85%	21	2205	0.95%	98.81%	0	22	83000	16925	419273
Reliance GSM	19:00 - 20:00	1944	946	0.07%	0	0.00%	97.66%	0.06%	0.37%	0.62%	67	5832	1.15%	98.06%	0	23	72000	64521	2334267
MTS	19:00 - 20:00	37	83	0.30%	0	0.00%	98.94%	0.00%	0.00%	1.54%	0	111	0.00%	98.24%	0	26	4200	3	475
Airtel	19:00 - 20:00	3688	5280	0.19%	40	1.08%	98.98%	0.06%	0.16%	0.80%	253	11562	2.19%	98.23%	0	57	247252	198206	5683659
Videocon	19:00 - 20:00	40	188	0.63%	0	0.00%	99.24%	0.28%	0.00%	1.85%	0	120	0.00%	98.75%	0	12	5000	2	109
S Tel	19:00 - 20:00	1044	1338	0.17%	0	0.00%	98.82%	0.34%	0.18%	0.47%	65	2123	3.06%	97.86%	0	44	16204	2960	173586
Uninor	19:00 - 20:00	948	2603	0.37%	3	0.32%	97.17%	0.90%	1.69%	1.90%	57	2834	2.01%	95.62%	0	60	32339	28297	637622
Vodafone	19:00 - 20:00	3338	2550	0.10%	4	0.12%	98.69%	0.29%	0.67%	1.07%	181	9951	1.82%	98.36%	0	42	88754	67223	2118703
Tata Tele - CDMA	19:00 - 20:00	469	92	0.03%	0	0.00%	98.61%	0.00%	0.01%	0.74%	16	1413	1.13%	99.13%	0	36	110987	22484	274446
Tata Docomo GSM	19:00 - 20:00	1654	99	0.01%	0	0.00%	99.15%	0.01%	0.10%	0.65%	78	4971	1.57%	98.35%	0	12	81176	28050	1021386
Aircel	19:00 - 20:00	2570	4669	0.24%	42	1.63%	98.76%	0.11%	0.90%	1.33%	282	7590	3.72%	96.14%	0	85	138666	43663	1401294
Loop	18:00 - 19:00	9	11	0.16%	0	0.00%	100.00%	0.17%	0.00%	0.26%	0	27	0.00%	97.45%	0	13	200	12	13

** Methodology not in line with QoS   ▢ Figures provided on All India basis   ▢ Not meeting the benchmark   **B'mar**k = TRAI Benchmark, **DNA** = Details not available, **NA:** Not Applicable

Critical findings: Cellular Mobile Services

The audit for cellular mobile service providers were conducted at their respective MSCs in the Orissa circle apart from Reliance Communication whose audit was conducted at their central NOC at Mumbai.

The audit involved a three stage verification process which consisted of auditing the records of the service providers and verifying the data submitted to TRAI. The second step involved a three day live measurement of all the network parameters. Finally basis the three day live measurement the auditors needed to find out the busy hour for the service provider and collect the hourly data for this busy hour for the month in which the audit was conducted.

Busy Hour of Various Service Providers

Service Provider	Reported Time Consistent Busy Hour	Network Busy Hour found in 3 day live measurement
Idea	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
BSNL	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Reliance CDMA	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Reliance GSM	2000 hrs - 2100 hrs	2000 hrs - 2100 hrs
MTS	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Airtel	1800 hrs - 1900 hrs	1800 hrs - 1900 hrs
Videocon	2000 hrs - 2100 hrs	2000 hrs - 2100 hrs
S Tel	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Uninor	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Vodafone	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Tata Tele - CDMA	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Tata Docomo GSM	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Aircel	1900 hrs - 2000 hrs	1900 hrs - 2000 hrs
Loop	2000 hrs - 2100 hrs	2000 hrs - 2100 hrs

The TCBH reported by all the service providers matched the network busy hour calculated by IMRB auditors for the Orissa circle.

BTSs Accumulated Downtime:
In the Orissa circle, BSNL experienced the highest outage (11798 hours) in the month of audit. Aircel followed by Airtel had maximum number of worst affected BTSs in the service area.

Call Set-up Success Rate (CSSR):
All the operators were comfortably meeting the benchmark on this parameter. During the audits the maximum CSSR was observed for Loop with 100% of their calls getting completed. All the operators were found to be calculating the parameter as per the norm specified by TRAI. CSSR was established as the ratio of total number of successful call attempts (establishment) to the total number of call attempts made.

Network Congestion parameters:
SDCCH / Paging Channel Congestion, TCH and POI are part of the network congestion parameters. All the operators are meeting the TRAI specified benchmarks on the congestion parameters.MTS and TATA lead the way in network congestion parameters with zero traffic channel congestion. The calculation methodology of these parameters was found to be in complete accordance with what has been specified by TRAI. There were no POIs with congestion more than the benchmark (≤0.5%)

Call Drop Rate:
During the audit it was found that all the service providers were measuring this parameter as per the TRAI guidelines. The call drop rate was measured as the ratio of total calls dropped to the total number of call attempts for all operators. Also, all of

service providers were found to be meeting the TRAI specified benchmark. The lowest call drop rate was of Loop at 0.26% while the highest was for Uninor at 1.90%.

Connections with good voice quality:
All the operators are measuring this parameter via their periodic drive tests. However, for some operators these parameters can be obtained at their switch as well. During the audit it was found that all the service providers were measuring this parameter as per the TRAI guidelines.

Customer Care / Helpline Assessment
For the accessibility of customer care aspect all the service providers meet the TRAI benchmark. BSNL (for percentage calls answered within 60 seconds) does not meet the benchmark for the month of audit

Billing performance
All the operators were found to be meeting the benchmark of ≤ 0.1% complaints registered per 100 bills issued except Idea and the benchmark of 100% billing complaints being resolved within 4 weeks was met by all operators. In all cases where customers were due for refund, all the service providers were meeting the TRAI benchmark of 100% with 1 week.

Inter operator calls assessment

Inter operator call Assessment To↓ From→	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Idea	NA	100%	100%	100%	99%	100%	100%	99%	100%	100%	100%	100%	100%	100%
BSNL	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance CDMA	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance GSM	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	99%	100%
MTS	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%
Videocon	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	99%
S Tel	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%
Uninor	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	99%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	99%
Tata Tele - CDMA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%
Tata Docomo GSM	100%	100%	100%	100%	99%	100%	99%	99%	100%	100%	100%	NA	100%	100%
Aircel	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	99%
Loop	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	NA

The maximum problem faced by the calling operator to other operators

The above test calls were made in Bhubhneshwar. In the inter-operator call assessment, calls were made from the test SIMs of service provider whose audit was being conducted to all the other service providers. MTS and S Tel connected to an Idea with 99% success rate. Videocon faced slight issues while connecting with Tata Docomo GSM and Loop with 99 out of 100 alls getting connected. Loop faced problem connecting with Videocon, Uninor, Vodafone and Aircel with 99 out of 100 calls getting connected.

Results of Operator assisted Drive test

The drive test was conducted simultaneously for all the operators present in the Orissa circle. There was in total of three drive tests conducted in the circle. These tests were conducted in the cities of Baleshwar, Sundargarh and Bhawanipatna. IMRB auditors were present in vehicles of every operator. A sample of 15 – 30 test calls were made along each of the routes. The holding period for all test calls was between 120 seconds to 180 seconds. The drive test vehicle across all routes plied at a speed of less than 20 km per hour. Taking into consideration the route that was taken for the drive test; most of the major areas Orissa telecom circles were covered.

For measuring voice quality RxQual samples for GSM operators and Frame Error Rate (FERs) for CDMA service providers were measured. RxQual greater than 5 meant that the sample was not of appropriate voice quality and for CDMA operators FERs of more than 4 were considered bad. Call drops were measured by the number of calls that were dropped to the total number of calls established during the drive test. Similarly CSSR was measured as the ratio of total calls established to the total call attempts made. Signal strength was measured in Dbm with strength > -75dbm for indoor, -85 dms for in-vehicle and > -95 dbm outdoor routes.

The drive tests in the Orissa circle were conducted in the cities of Baleshwar, Sundargarh and Bhawanipatna was conducted along the following route:

	Type of location	Baleshwar	Sundargarh	Bhawanipatna
Outdoor	Periphery of the city	Kuruda Chowk, Birla Tyre, Sambalpur Chowk, Tata Motors, Remuna Golei, Jaleswar Golei	Ranibagicha Chaka-Luradhipa-Gadapatrapali Chaka-Tollgate	Park-Majhipada-Sadium-Ramnagarpada-Trinath Temple-B, Patna ITI
	Congested area	FM Golei, Phandi Chak, Chidiya Pola, Hospital Chaak, Motiganj, Golei, Paruda Pada, Gadagadiya Chaak, Central School, ITI Chaak	Rangadhipa Chaka-Old Cinema Road-Sunaripada-Hanuman Temple Bus Stand-Court Chaka- Govt. Women's College	Naktiguda-Junagarh Road (by pass)-Malipada-Muncipality office-Ghodaghat Chowk-Palace Road-Manikeswar Temple-LIC Office-HDFC Bank-College Road
	Across the city	Remuna Golei, Balia Chowk, Sahadev Khunta, Bus Stand, FM Golei, Station Chowk, Police Lane, ITI Chowk, Sambad Office Chowk, Laxmi narayan Mandir, Jyoti Hospital, Kuruda Chaak, HP Petrol Pump	Sankara Park-Mission Road-Hospital-Sai Vihar Road-Bus Stand-Block Chaka-RTO Office-Rourkela Bypass	Saraswati Residential College-HDFC Bank-Manikeswar Temple-Ghodaghat Chowk-Bus Stand-Junagarh Bypass-Satsang Vihar
Indoor	Office complex	BSNL Office	BSNL Office	BSNL TDM Office, B.Patna
	Shopping complex	New Market Complex, Phandi Chak	Tushar Marketing Complex	Bus Stand Market Complex

The tables given below gives a glimpse of the results of the operator assisted drive test:
Loop and Stel has not participated in any of the 3 drive test locations in Orissa due to non presence of its network in any of these cities. Also MTS and Uninor did not have network presence in Baleshwar and Bhawanipatna

Drive Test – Baleshwar

	B'mark	Idea		BSNL		Reliance CDMA		Reliance GSM		Airtel		Uninor		Vodafone		Tata Tele - CDMA		Tata Docomo GSM		Aircel	
		In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor
Voice quality	≥ 95%	100.00%	100.00%	97.00%	95.83%	100.00%	99.09%	99.13%	97.66%	99.70%	97.16%	98.65%	95.93%	98.50%	97.49%	96.37%	94.65%	98.41%	98.16%	99.56%	96.67%
CSSR	≥ 95%	100.00%	100.00%	100.00%	98.95%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.04%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
%age Blocked calls		0.00%	0.00%	0.00%	1.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.96%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Call drop rate	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hands off success rate		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.33%	100.00%	100.00%	0.00%	100.00%	0.00%	100.00%

Drive Test – Sundargarh

	B'mark	Idea		BSNL		Reliance CDMA		Reliance GSM		MTS		Airtel		Videocon		Uninor		Vodafone		Tata Tele - CDMA		Tata Docomo GSM		Aircel	
		In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor
Voice quality	≥ 95%	100.00%	100.00%	96.50%	95.32%	100.00%	99.75%	93.48%	97.59%	100.00%	100.00%	98.15%	97.40%	96.67%	98.36%	99.29%	99.09%	98.58%	99.51%	92.72%	93.81%	99.42%	100.21%	99.59%	98.19%
CSSR	≥ 95%	100.00%	100.00%	100.00%	98.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.96%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.53%	98.15%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
%age Blocked calls		0.00%	0.00%	0.00%	2.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.47%	1.85%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Call drop rate	≤ 2%	0.00%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.49%	2.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hands off success rate		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Drive Test – Bhawanipatna

	B'mark	BSNL		Reliance CDMA		Reliance GSM		Airtel		Uninor		Vodafone		Tata Tele - CDMA		Tata Docomo GSM		Aircel	
		In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor	In door	Outdoor
Voice quality	≥ 95%	96.55%	96.66%	98.24%	99.92%	96.19%	96.39%	99.78%	97.80%	99.31%	70.86%	98.03%	78.18%	94.81%	94.38%	99.08%	98.36%	99.69%	96.42%
CSSR	≥ 95%	100.00%	98.94%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.97%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
%age Blocked calls		0.00%	1.06%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Call drop rate	≤ 2%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hands off success rate		100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	98.57%	100.00%	100.00%	100.00%	100.00%	0.00%	100.00%

Not meeting the benchmark

Conclusions:

Drive test was conducted by IMRB with the help of service providers to measure this parameter. In the drive test it was found that all the operators meet the TRAI benchmark on voice quality.

1. Tata Tele CDMA does not meet the TRAI benchmark on Voice Quality in Baleshwar for outdoor routes.
2. MTS and TATA CDMA does not meet voice quality benchmark for both Indoor and Outdoor routes while Reliance CDMA fails to meet the same only for outdoor route in Sundargarh.
3. Vodafone does not meet the Call drop Rate benchmark for outdoor route in Sundargarh.
4. Uninor and Vodafone do not meet the voice quality benchmark for outdoor routes and Tata Tele for indoor and outdoor routes of Bhawanipatna.

IMRB
international

Summary of Live Measurement Results – Cellular Mobile Services

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)		
	BTSs Accumulated downtime (not available for service)	Worst affected BTSs due to downtime	Call Set-up Success Rate (within licensee's own network)	SDCCH/ Paging Chl. Congestion (%age)	TCH Congestion (%age)	Call Drop Rate (%age)	Worst affected cells having more than 3% TCH drop	%age of connection with good voice quality
Benchmark	≤ 2%	≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%	≤ 5%	≥ 95%
Idea	0.39%	0.26%	99.46%	0.03%	0.09%	0.66%	2.91%	97.20%
BSNL	0.30%	0.00%	98.34%	0.84%	1.66%	1.03%	2.98%	98.00%
Reliance CDMA	0.15%	0.00%	99.52%	0.00%	0.03%	0.67%	0.91%	98.87%
Reliance GSM	0.06%	0.00%	98.70%	0.17%	0.15%	0.48%	0.27%	98.41%
MTS	0.56%	0.00%	98.65%	0.00%	0.00%	0.83%	0.00%	97.58%
Airtel	0.16%	0.05%	99.06%	0.06%	0.16%	0.80%	2.19%	98.06%
Videocon	0.00%	0.00%	98.89%	0.18%	0.11%	0.57%	0.00%	95.27%
S Tel	0.15%	0.00%	98.50%	0.28%	0.15%	0.52%	2.03%	98.00%
Uninor	0.87%	0.00%	98.51%	0.01%	0.03%	1.69%	2.86%	95.52%
Vodafone	0.10%	0.00%	98.32%	0.54%	0.77%	1.16%	1.86%	98.09%
Tata Tele - CDMA	0.01%	0.00%	99.00%	0.00%	0.00%	0.60%	0.78%	99.45%
Tata Docomo GSM	0.01%	0.00%	99.14%	0.00%	0.02%	0.64%	1.54%	98.09%
Aircel	0.31%	0.04%	99.18%	0.23%	0.88%	1.57%	4.42%	96.11%
Loop	0.02%	0.00%	100.00%	0.14%	0.00%	0.00%	0.00%	98.59%

☐ Not meeting the benchmark

During the three day live measurement, all operators were found to be meeting the TRAI benchmark on all the parameters.

Summary of Live Calling Results – Cellular Mobile Services

Name of Service Provider	Metering and Billing	Response time to customer for assistance	
	%age complaints resolved within 4 weeks	Accessibility of call centre/ customer care	Percentage of calls answered by the operators (voice to voice) within 60 seconds
Benchmark	100%	≥ 95%	≥ 90%
Idea	99.00%	100.00%	100.00%
BSNL	99.00%	100.00%	98.00%
Reliance CDMA	98.00%	100.00%	97.00%
Reliance GSM	99.00%	100.00%	99.00%
MTS	NA	100.00%	99.00%
Airtel	100.00%	100.00%	99.00%
Videocon	NA	100.00%	98.00%
S Tel	98.00%	100.00%	99.00%
Uninor	100.00%	100.00%	100.00%

Vodafone	100.00%	100.00%	99.00%
Tata Tele - CDMA	99.00%	100.00%	100.00%
Tata Docomo GSM	NA	100.00%	99.00%
Aircel	99.00%	100.00%	99.00%
Loop	NA	100.00%	100.00%

During the live calling, operators were found to be not meeting the TRAI benchmark on metering and billing – complaint resolution within 4 weeks where all operators apart from Aritel, Uninor and Vodafone fail to meet benchmark.

6.0 Detailed findings – Includes comparison between Live calling/Live measurements and One month data collection

6.1 Graphical/Tabular Representations for Cellular Mobile Services

<u>BTSs Accumulated Downtime</u>
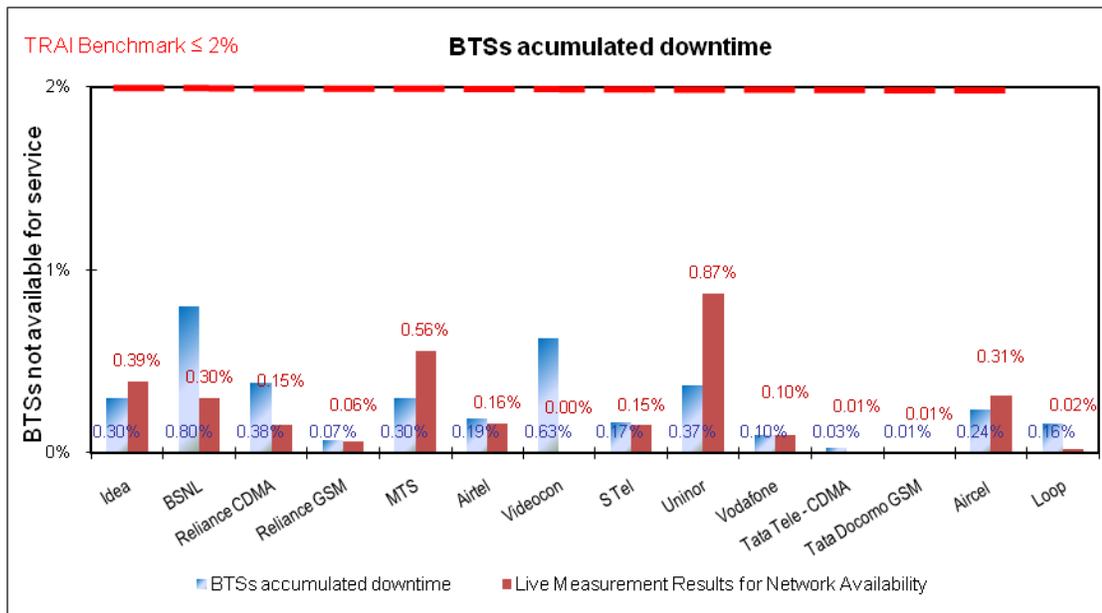
One month

All the operators meet the benchmark

Live measurement

All the operators meet the benchmark

Worst Affected BTSs
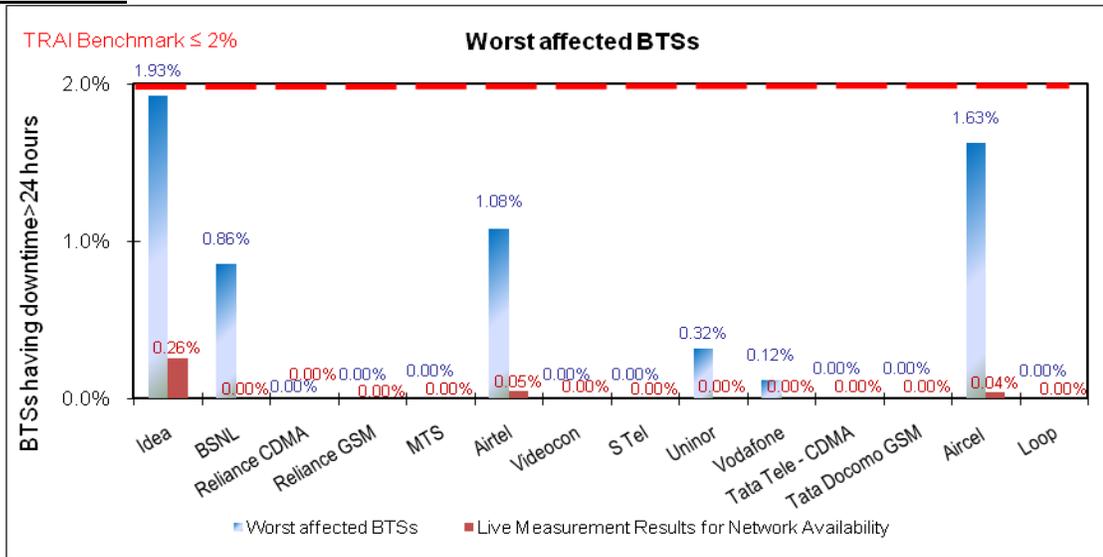
One month
All the operators meet the benchmark

Live measurement
All the operators meet the benchmark

Call Set-up Success Rate (CSSR)
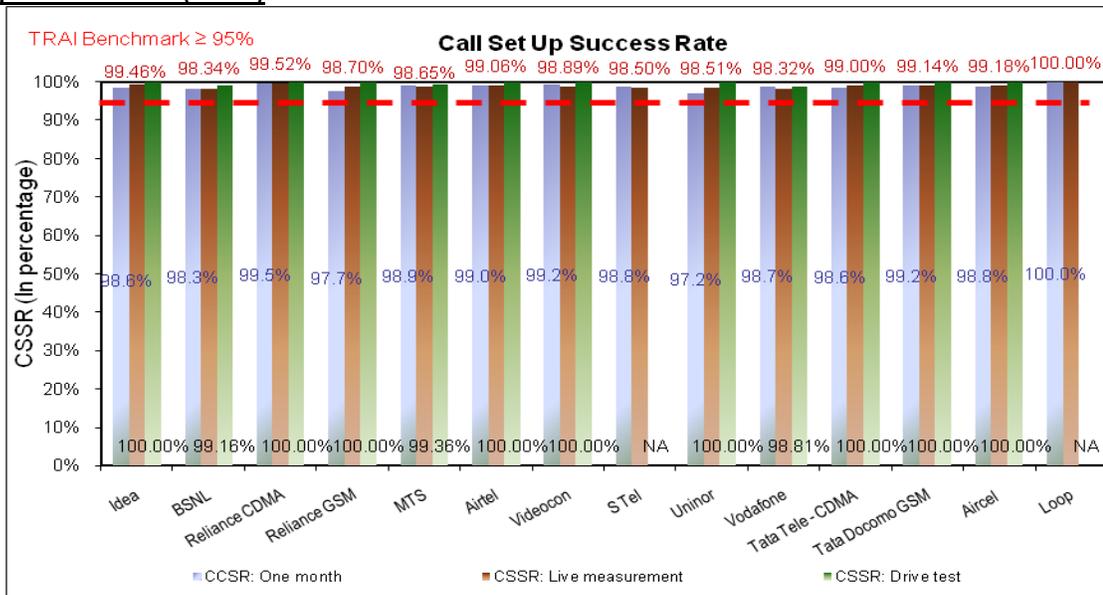
One month
All the operators meet the benchmark
Live measurement
All the operators meet the benchmark
Drive test
All the operators meet the benchmark

SDCCH / Paging Channel Congestion
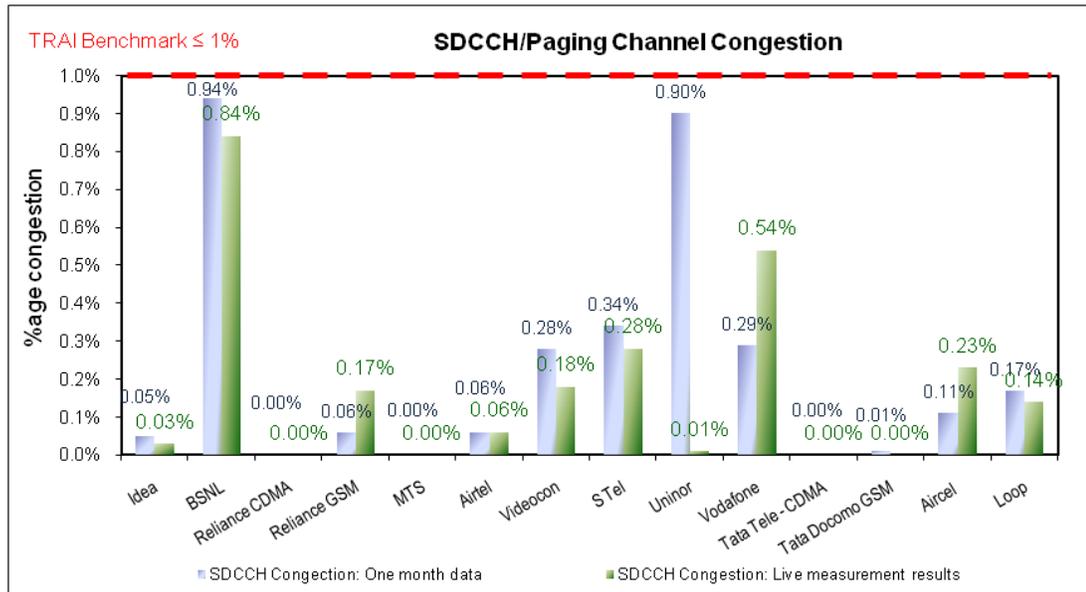
One month
All the operators meet the benchmark
Live measurement
All the operators meet the benchmark

TCH Congestion

One month
All the operators meet the benchmark
Live measurement
All the operators meet the benchmark

Call Drop Rate

One month
All the operators meet the benchmark
Live measurement
All the operators meet the benchmark
Drive test
All the operators meet the benchmark

Cells with more than 3% TCH Drop Rate
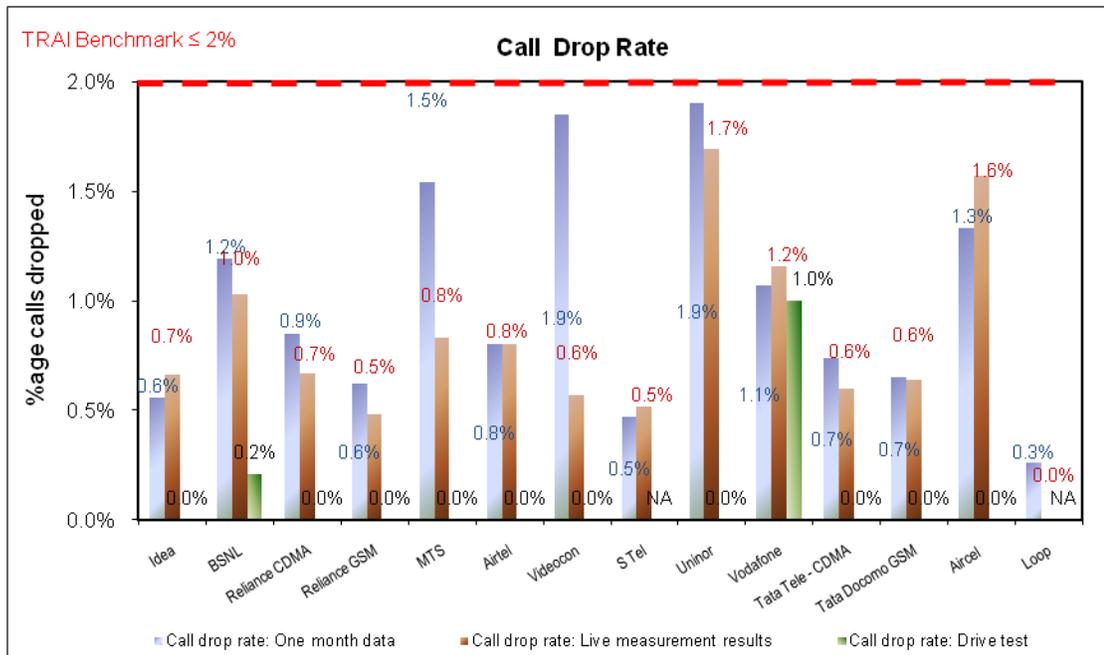
One month
Operator(s) meeting benchmark: Idea, BSNL, Reliance CDMA, Reliance GSM, MTS, Airtel, Videocon, Uninor, Vodafone, Tata Tele - CDMA, Tata Docomo GSM, Loop
Operator(s) not meeting the benchmark: S Tel, Aircel

Live measurement
Operator(s) meeting benchmark: Idea, BSNL, Reliance CDMA, Reliance GSM, MTS, Airtel, Videocon, S Tel, Uninor, Vodafone, Tata Tele - CDMA, Tata Docomo GSM, Loop
Operator(s) not meeting the benchmark: Aircel

Voice quality

One month
All the operators meet the benchmark

Live measurement
All the operators meet the benchmark

Drive test
Operator(s) meeting benchmark: Idea, BSNL, Reliance CDMA, Reliance GSM, Airtel, Videocon, Vodafone, Tata Docomo GSM, Aircel
Operator(s) not meeting the benchmark: MTS, Uninor, Tata Tele - CDMA

Billing Disputes - Postpaid

Operator(s) meeting benchmark: BSNL, Reliance CDMA, Reliance GSM, Airtel, Vodafone, Tata Tele - CDMA, Tata Docomo GSM, Aircel
Operator(s) not meeting the benchmark: Idea

Complaints - Prepaid
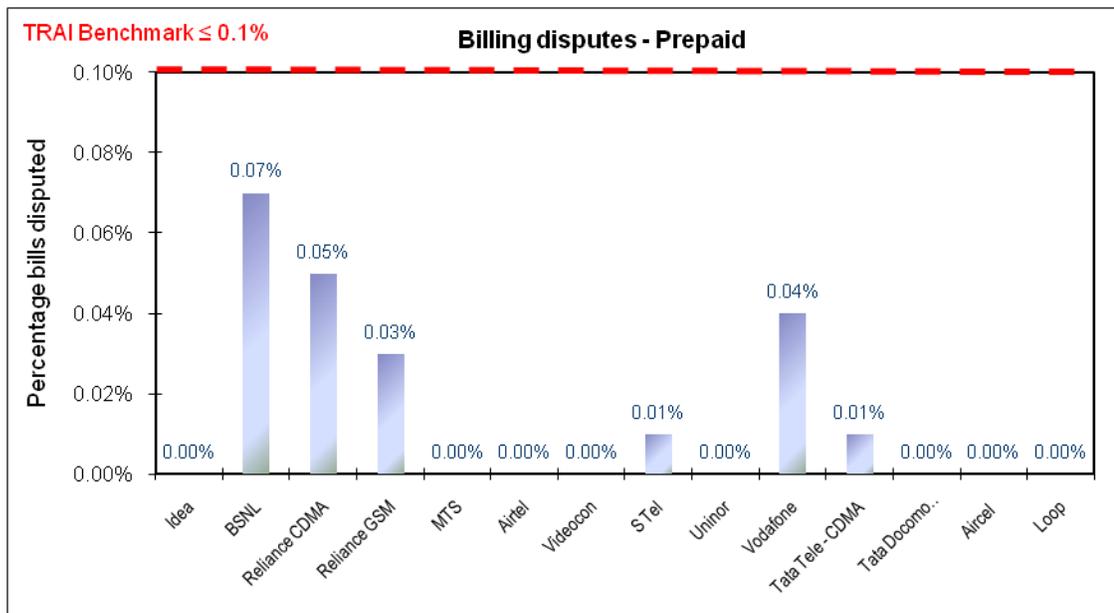
All the operators meet the benchmark

Resolution of billing complaints

One month
All the operators meet the benchmark
Live calling
Operator(s) meeting benchmark: Airtel, Uninor, Vodafone, Tata Docomo GSM
Operator(s) not meeting the benchmark: Idea, BSNL, Reliance CDMA, Reliance GSM, S Tel, Tata Tele - CDMA, Aircel

Period of applying credit / waiver
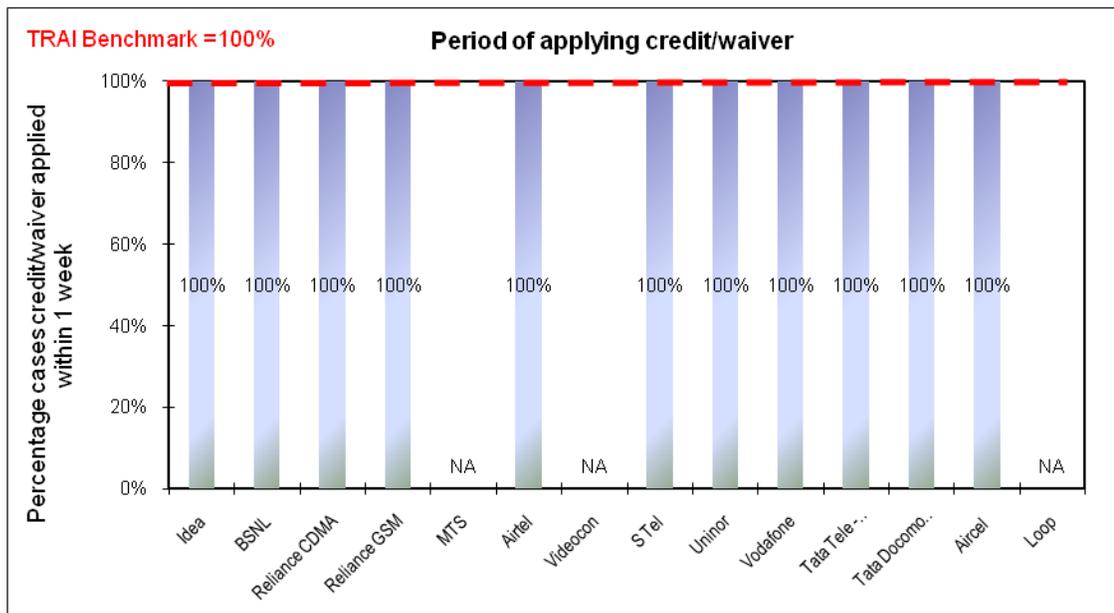
All the operators meet the benchmark

Live calling for billing Complaints

Resolution of billing complaints	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total Number of calls made		100	100	100	100	NA	100	NA	100	100	100	100	100	100	NA
Number of cases resolved in 4 weeks		99	99	98	99	NA	100	NA	98	100	100	99	100	99	NA
Percentage cases resolved in four weeks	100%	99%	99%	98%	99%	NA	100%	NA	98%	100%	100%	99%	100%	99%	NA

Customer Care / Helpline: Calls answered
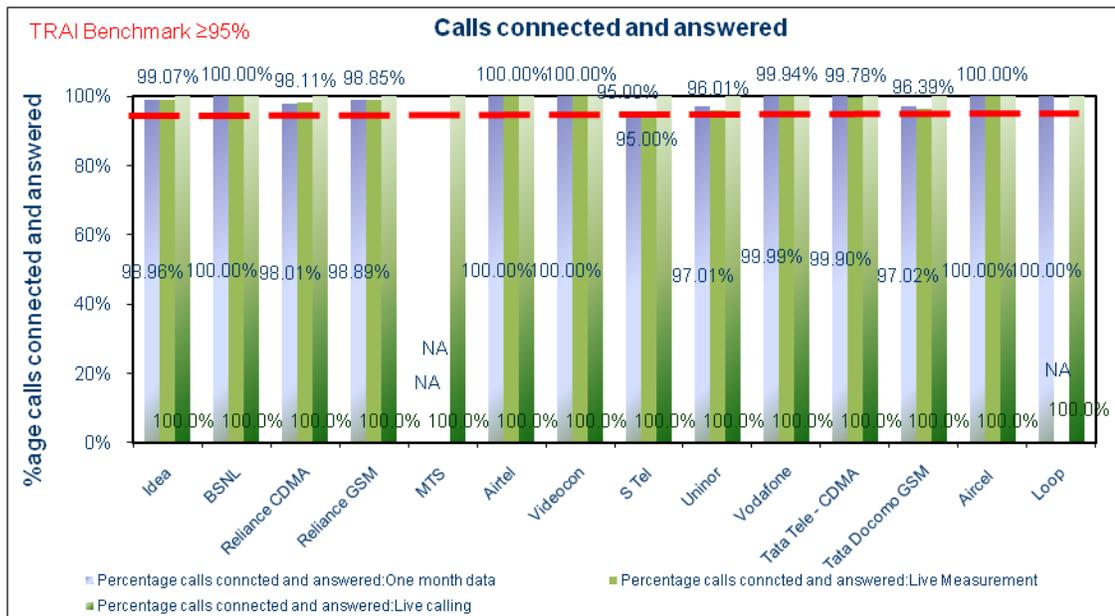
One month
All the operators meet the benchmark

Live measurement
All the operators meet the benchmark
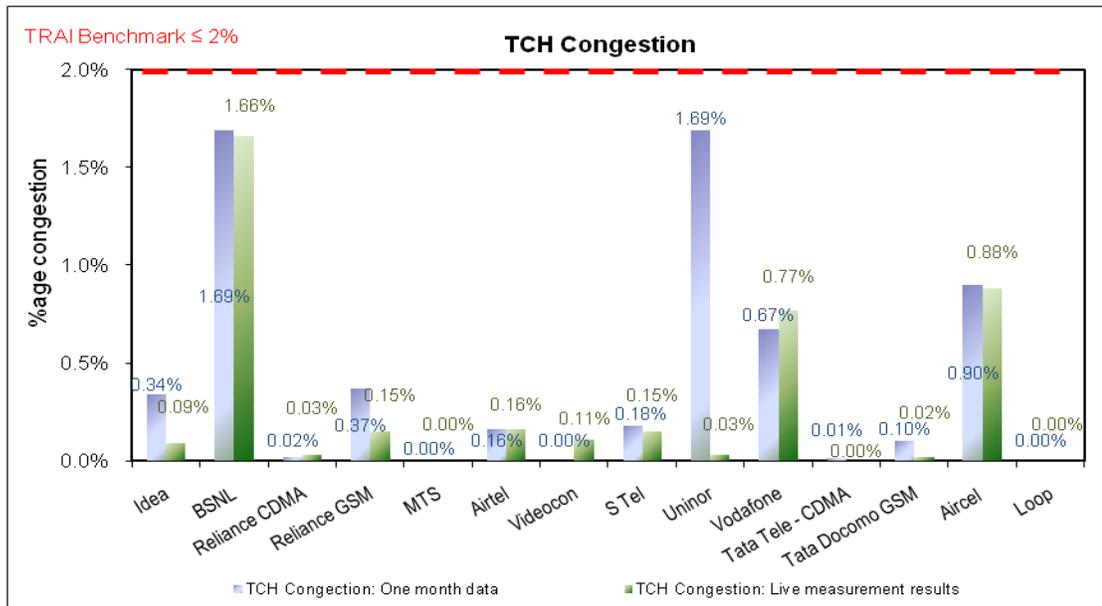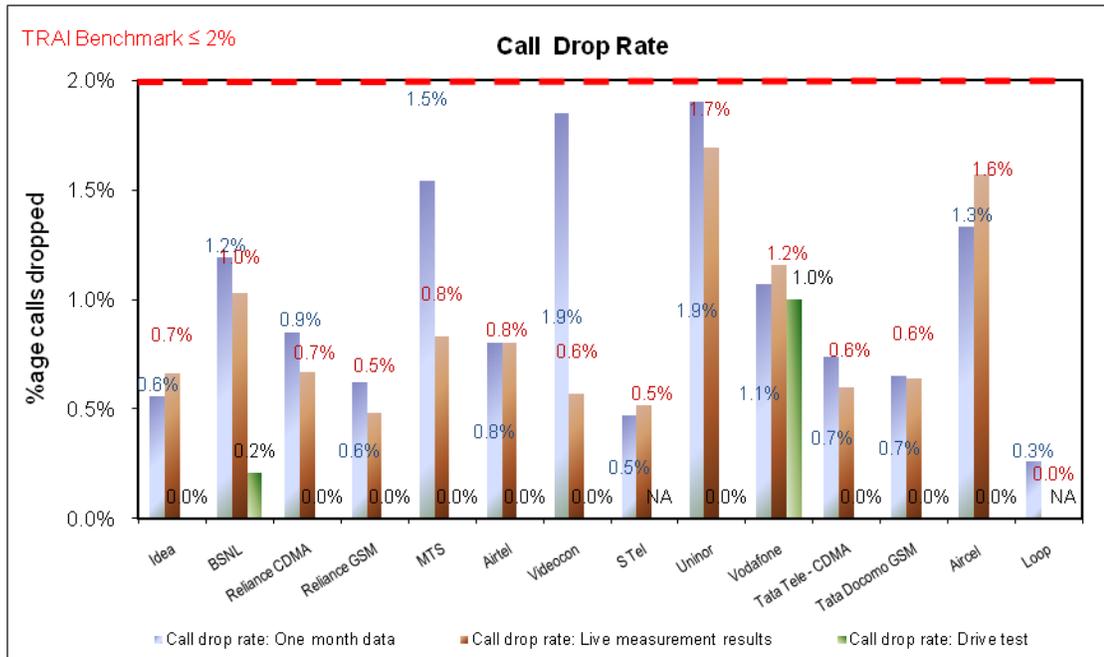
Live calling
All the operators meet the benchmark

Customer Care / Helpline: Calls answered voice to voice
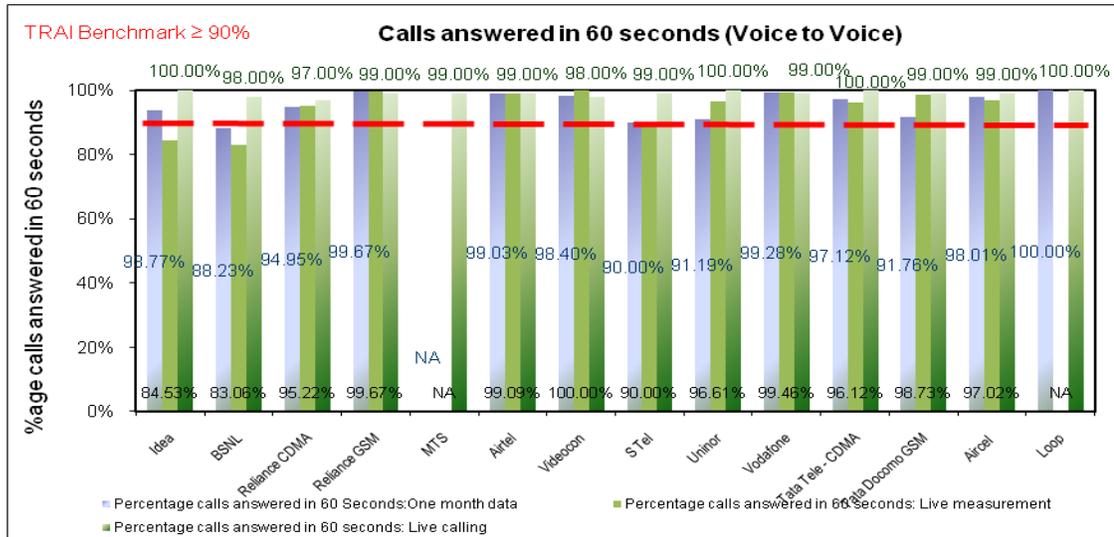
One month
Operator(s) meeting benchmark: Idea, Reliance CDMA, Reliance GSM, Airtel, Videocon, S Tel, Uninor, Vodafone, Tata Tele - CDMA, Tata Docomo GSM, Aircel, Loop
Operator(s) not meeting the benchmark: BSNL
Live measurement
Operator(s) meeting benchmark: Reliance CDMA, Reliance GSM, Airtel, Videocon, S Tel, Uninor, Vodafone, Tata Tele - CDMA, Tata Docomo GSM, Aircel
Operator(s) not meeting the benchmark: Idea, BSNL
Live calling
All the operators meet the benchmark

Termination / Closure of service
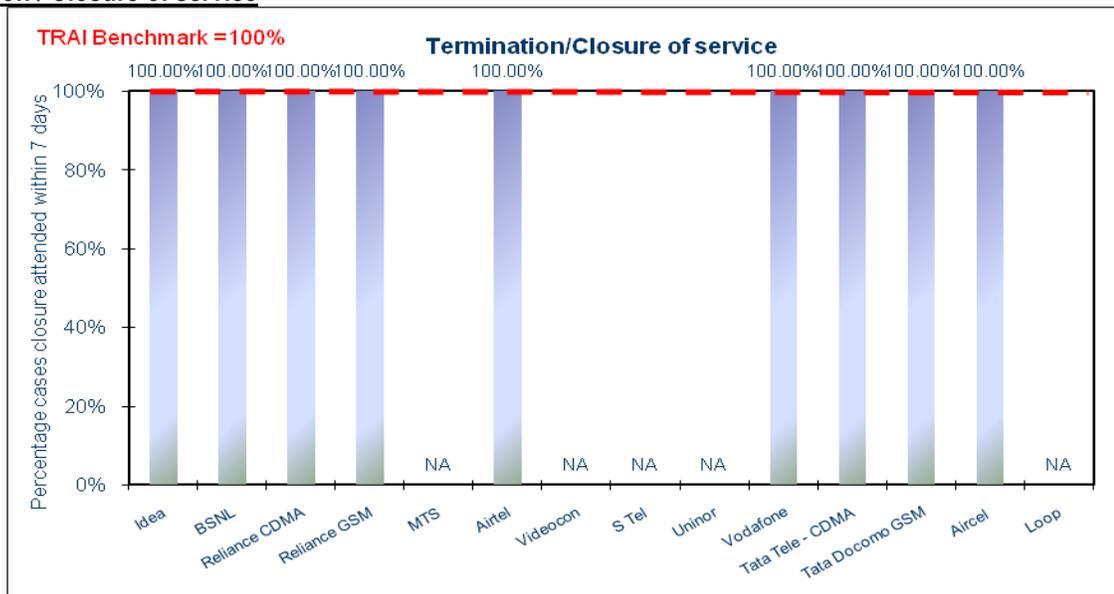
All the operators meet the benchmark

Refund of deposits
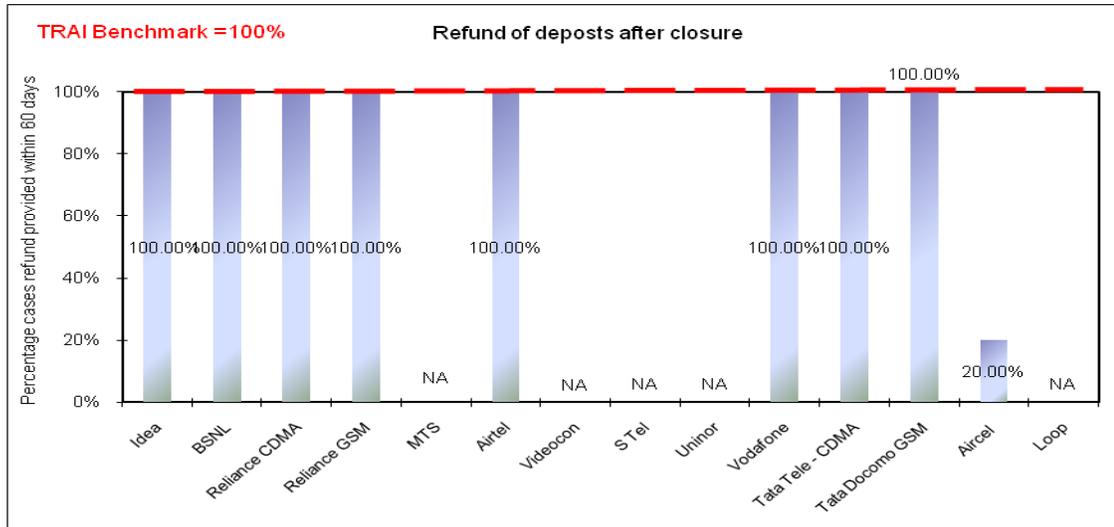
Operator(s) meeting benchmark: Idea, BSNL, Reliance CDMA, Reliance GSM, Airtel, Vodafone, Tata Tele - CDMA, Tata Docomo GSM
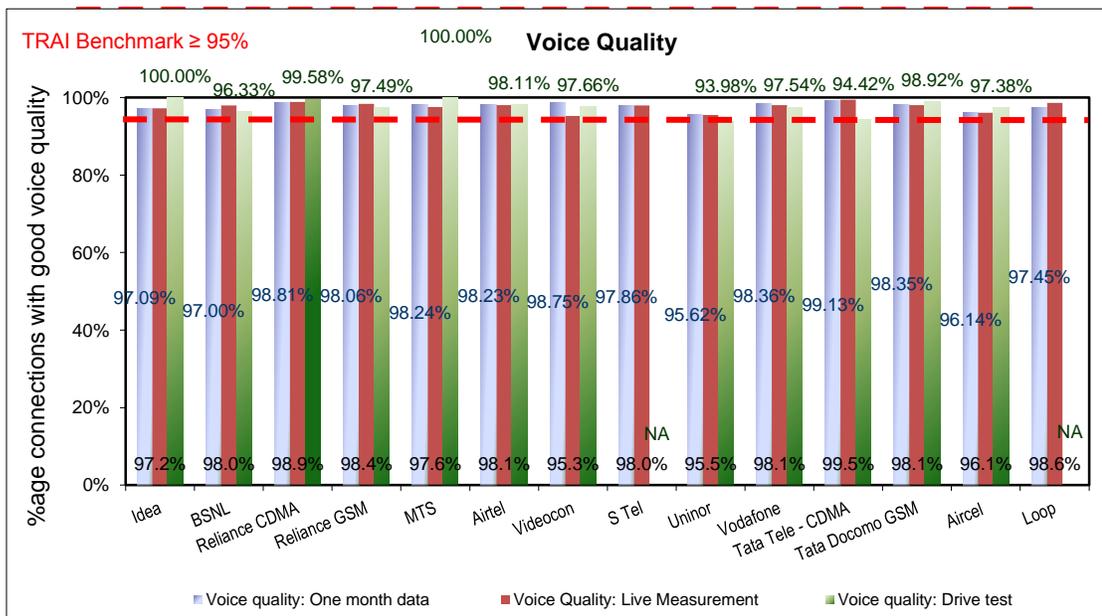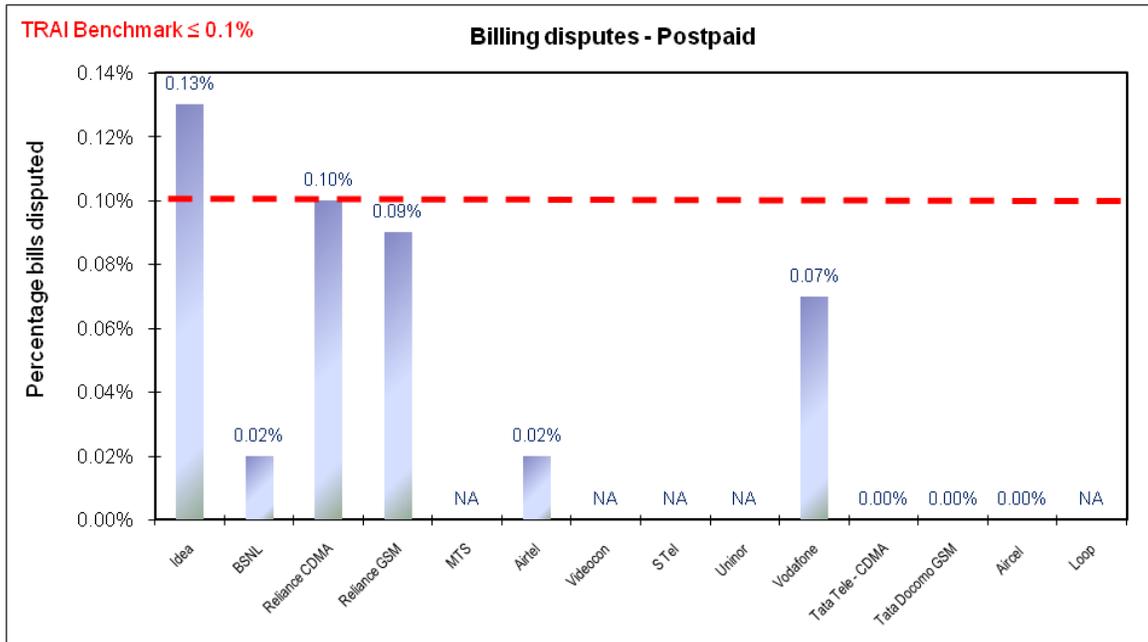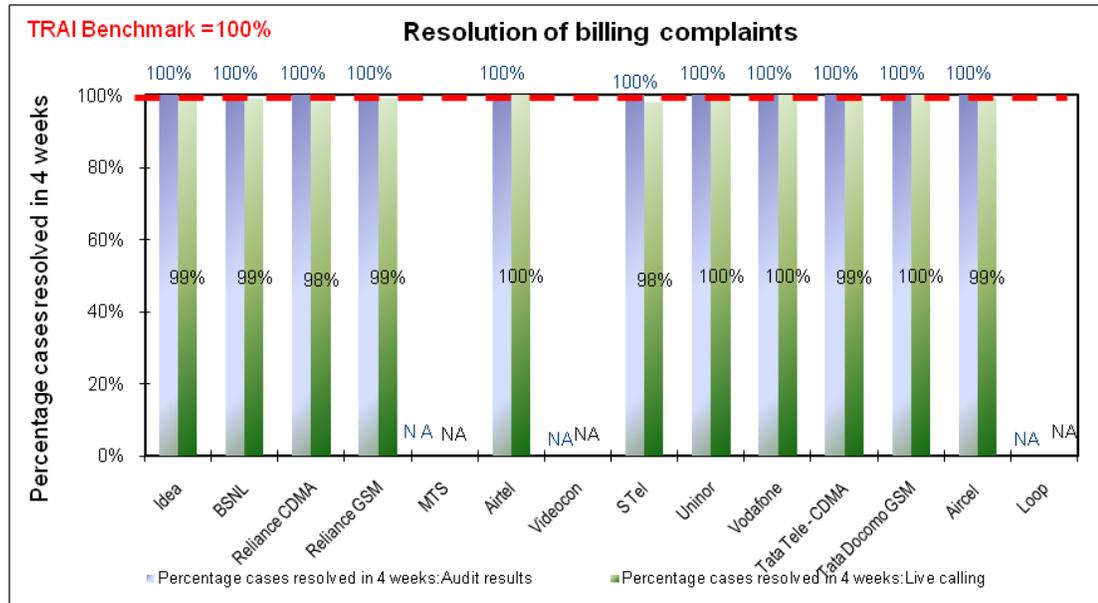Operator(s) not meeting the benchmark: Aircel

Inter operator calls assessment

Inter operator call Assessment To↓ From→	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Idea	NA	100%	100%	100%	99%	100%	100%	99%	100%	100%	100%	100%	100%	100%
BSNL	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance CDMA	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance GSM	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	99%	100%
MTS	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%
Videocon	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	99%
S Tel	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%
Uninor	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	99%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	99%
Tata Tele - CDMA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%
Tata Docomo GSM	100%	100%	100%	100%	99%	100%	99%	99%	100%	100%	100%	NA	100%	100%
Aircel	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	99%
Loop	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	NA

The maximum problem faced by the calling operator to other operators

In the inter-operator call assessment, calls were made from the test SIMs of service provider whose audit was being conducted to all the other service providers. MTS and S Tel connected to an Idea with 99% success rate. Videocon faced

slight issues while connecting with Tata Docomo GSM and Loop with 99 out of 100 alls getting connected. Loop faced problem connecting with Videocon, Uninor, Vodafone and Aircel with 99 out of 100 calls getting connected.

7.0 Compliance reports: Results of Verification of PMR

7.1 Cellular Mobile services

Name of Service Provider		Network Availability					Connection Establishment			Connection Maintenance (Retainability)					POI	Network Traffic Capacity		
		Total no. of BTSs in the licensed service area	Sum of downtime of BTSs in a month in hours i.e. total outage time of all BTSs in hours during a month	BTSs Accumulated downtime (not available for service) (%age)	No. of BTSs having accumulated downtime of >24 hours in a month	Worst affected BTSs due to downtime (%age)	Call Set-up Success Rate (within licensee's own network)	SDCCH/ Paging chl. Congestion (%age)	TCH Congestion (%age)	Call Drop Rate (%age)	Total No. of cells exceeding 3% TCH drop (call drop	Total no. of cells in the network	Worst affected cells having more than 3% TCH drop (call drop) rate (%age)	%age connection with good voice quality	Point of Interconnection (POI) Congestion	Equipped Capacity of Network in respect of Traffic in erlang	Total traffic handled in TCHB in erlang	Total no. of customer serves (as per VLR) on last day of the month
Benchmark				≤ 2%		≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%			≤ 5%	≥ 95%				
Idea	PMR	1097	2961	0.36%	1	0.12%	98.79%	0.08%	0.19%	0.71%	95	3286	2.90%	96.95%	0	28235	13999.0	473833
	IMRB	1097	2961	0.36%	1	0.12%	98.79%	0.08%	0.19%	0.71%	1884	65920	2.90%	96.95%	0	28235	13999.0	473833
BSNL	PMR	1987	11993	0.81%	28	1.41%	97.96%	0.86%	1.78%	1.95%	288	5961	4.83%	98.33%	0	168600	124745.0	2389548
	IMRB	1987	11993	0.81%	28	1.41%	97.96%	0.86%	1.78%	1.95%	288	5961	4.83%	98.33%	0	168600	124745.0	2389548
Reliance CDMA	PMR	887	1793	0.27%	4	0.41%	99.57%	0.00%	0.04%	0.61%	6	887	0.71%	99.29%	0	111000	16963.6	NA
	IMRB	887	1793	0.27%	4	0.41%	99.57%	0.00%	0.04%	0.61%	6	887	0.71%	99.29%	0	111000	16963.6	NA
Reliance GSM	PMR	1747	164	0.01%	1	0.06%	99.52%	0.67%	0.74%	0.67%	38	3749	1.19%	99.03%	0	72000	58668.4	NA
	IMRB	1747	164	0.01%	1	0.06%	99.52%	0.67%	0.74%	0.67%	38	3749	1.19%	99.03%	0	72000	58668.4	NA
MTS	PMR	37	137	0.51%	0	0.00%	99.52%	0.00%	0.00%	0.53%	0	111	0.00%	100.00%	0	4200	2.2	229
	IMRB	37	137	0.51%	0	0.00%	99.52%	0.00%	0.00%	0.53%	0	111	0.00%	100.00%	0	4200	2.2	229
Airtel	PMR	3596	10182	0.38%	51	1.42%	97.86%	0.53%	0.86%	1.75%	326	11163	2.92%	95.67%	0	240331	193404.8	5158275
	IMRB	3596	10182	0.38%	51	1.42%	97.86%	0.53%	0.86%	1.75%	326	11163	2.92%	95.67%	0	240331	193404.8	5158275
Videocon	PMR	40	210	0.71%	0	0.00%	99.16%	0.13%	0.24%	0.40%	0	120	0.00%	99.01%	0	5000	4.0	797
	IMRB	40	210	0.71%	0	0.00%	99.17%	0.13%	0.24%	0.40%	0	120	0.00%	99.01%	0	5000	4.0	797
S Tel	PMR	1049	3433	0.44%	0	0.00%	98.87%	0.09%	0.10%	0.47%	107	3149	3.41%	97.99%	0	23565	7573.7	321537
	IMRB	1049	3433	0.44%	0	0.00%	98.87%	0.09%	0.10%	0.47%	107	3149	3.41%	97.99%	0	23565	7573.7	321537
Uninor	PMR	1005	6108	0.66%	1	0.10%	98.09%	0.18%	0.35%	1.77%	106	3004	3.53%	95.29%	0	32425	15024.7	485624
	IMRB	1005	6108	0.66%	1	0.10%	98.09%	0.18%	0.35%	1.77%	106	3004	3.53%	95.29%	0	32425	15024.7	485624
Vodafone	PMR	3293	2049	0.09%	3	0.10%	98.55%	0.24%	0.82%	1.36%	317	9808	3.23%	98.19%	0	84458	61388.7	1873284
	IMRB	3293	2049	0.09%	3	0.10%	98.55%	0.24%	0.82%	1.36%	317	9808	3.23%	98.19%	0	84458	61388.7	1873284

Provider																		
Tata Tele - CDMA	PMR	469	147	0.04%	0	0.00%	99.21%	0.00%	0.00%	0.24%	6	1412	0.45%	99.78%	0	61248	15741.7	290620
	IMRB	469	147	0.04%	0	0.00%	99.21%	0.00%	0.00%	0.24%	6	1412	0.45%	99.78%	0	61248	15741.7	290620
Tata Docomo GSM	PMR	1601	317	0.02%	1	0.08%	98.66%	0.10%	0.34%	0.48%	54	4808	1.12%	97.63%	0	76438	25734.7	858835
	IMRB	1601	317	0.02%	1	0.08%	98.66%	0.10%	0.34%	0.48%	54	4808	1.12%	97.63%	0	76438	25734.7	858835
Aircel	PMR	2543	4538	0.24%	44	1.76%	99.22%	0.30%	0.46%	1.11%	533	7509	7.14%	95.92%	0	135927	40022.3	1208180
	IMRB	2543	4538	0.24%	44	1.76%	99.22%	0.30%	0.46%	1.11%	533	7509	7.14%	95.92%	0	135927	40022.3	1208180
Loop	PMR	9	32	0.48%	0	0.00%	99.21%	0.01%	0.39%	0.00%	0	27	0.00%	96.86%	0	200	5.0	24
	IMRB	9	32	0.48%	0	0.00%	99.21%	0.01%	0.39%	0.00%	0	27	0.00%	96.86%	0	200	5.0	24

Name of Service Provider		Metering and Billing												Response time to the customer for assistance				Termination/ closure of service			
		Metering and billing credibility - post paid	No. of bills issued during the period	No. of bills disputed including billing complaints during the period	Metering and billing credibility - pre paid	No. of charging / credit / validity complaints during the quarter	Total no. of pre-paid customers at the end of the quarter	Resolution of billing/charging complaints	No. of billing (post-paid and charging, credit / validity (pre-paid) complaints resolved within 4 weeks during the quarter	Total no. of billing (post-paid) and charging, credit / validity (pre-paid) complaints received during the quarter	and charging, credit / validity complaints (pre paid) resolved in favor	No. of complaints disposed on account of not considered as valid complaints during the quarter	adjustment to customer/s account from the date of resolution of	Accessibility of call centre/ customer care	Total no. of call attempts to call centre / customer care nos. during TCBH (Note)	No. of calls connected and answered successfully to call centre / customer care nos. during TCBH (Note)	Percentage of calls answered by the operators (voice to voice) within 60 seconds	%age request for Termination / Clouse of service complied within 7 days	Total No. of request for Termination / Closure of service received during the quarter	No. of requests for Termination / Closure of service complied within 7 days during the quarter	Time taken for refund of deposits after closure
Benchmark		< 0.1%			< 0.1%			100% within 4 weeks					100% Within 1 week	> 95%			> 90%	100% within 7 days			100% within 60 days
Idea	PMR	0.04%	5324	2	0.01%	227	1940166	100%	1411	1411	228	1183	100.00%	99.00%	304835	301347	89.00%	100%	1	1	100%
	IMRB	0.04%	5324	2	0.01%	227	1940166	100%	1411	1411	228	1183	100.00%	99.00%	304835	301347	89.00%	100%	1	1	100%
BSNL	PMR	0.02%	174825	34	0.03%	3823	3841354	100%	3857	3857	63	3794	100.00%	95.21%	6893	5267768	89.46%	100%	178	178	100%
	IMRB	0.02%	174825	34	0.03%	3823	3841354	100%	3857	3857	63	3794	100.00%	100.00%	6593	5267768	89.37%	100%	178	178	100%
Reliance CDMA	PMR	0.09%	93451	82	0.04%	291	754707	100%	954	954	448	506	100.00%	98.00%	93081	90828	95.00%	100%	222	222	100%
	IMRB	0.09%	93451	82	0.04%	291	754707	100%	954	954	448	506	100.00%	98.00%	93081	90828	95.00%	100%	222	222	100%
Reliance GSM	PMR	0.09%	30471	28	0.03%	1161	3916810	100%	3512	3512	1730	1782	100.00%	98.85%	8583111	8682951	87.64%	100%	64	64	100%
	IMRB	0.09%	30471	28	0.03%	1161	3916810	100%	3512	3512	1730	1782	100.00%	98.85%	8583111	8682951	87.64%	100%	64	64	100%
MTS	PMR	0.00%	0	0	0.00%	0	633	0%	0	0	0	0	0.00%	100.00%	1	1	90.00%	0%	0	0	0%
	IMRB	0.00%	0	0	0.00%	0	633	0%	0	0	0	0	0.00%	100.00%	1	1	90.00%	0%	0	0	0%
Airtel	PMR	0.01%	73395	6	0.00%	358	20938959	100%	364	10216	364	9852	100.00%	100.00%	4659523	4642535	95.00%	100%	439	439	100%

	IMRB	0.01%	73395	6	0.00%	358	20938959	100%	364	10216	364	9852	100.00%	100.00%	4659523	4642535	95.00%	100%	439	439	100%
Videocon	PMR	NA	NA	NA	0.00%	0	10548	100%	0	0	0	0	NA	100.00%	394	394	98.37%	NA	0	0	NA
	IMRB	NA	NA	NA	0.00%	0	10548	100%	0	0	0	0	NA	100.00%	394	394	98.37%	NA	0	0	NA
S Tel	PMR	0.00%	0	0.00%	0.07%	646	943502	100%	646	646	306	340	100.00%	72.00%	423543	303685	72.00%	0%	0	0	0%
	IMRB	0.00%	0	0.00%	0.07%	646	943502	100%	646	646	306	340	100.00%	72.00%	423543	303685	72.00%	0%	0	0	0%
Uninor	PMR	0.00%	0	0	0.00%	475	1277692	100%	475	475	0	0	0.00%	99.00%	240477	237616	97.00%	0%	0	0	0%
	IMRB	0.00%	0	0	0.00%	475	1277692	100%	475	475	0	0	0.00%	99.00%	240477	237616	97.00%	0%	0	0	0%
Vodafone	PMR	0.05%	54022	28	0.08%	5993	2382766	100%	6021	6021	5614	407	100.00%	100.00%	9656986	9656600	95.00%	100%	97	97	100%
	IMRB	0.05%	54022	28	0.08%	5993	2382766	100%	6021	6021	5614	407	100.00%	100.00%	9656986	9656600	95.00%	100%	97	97	100%
Tata Tele - CDMA	PMR	0.01%	56896	3	0.03%	185	718345	100%	2644	2643	188	2456	100.00%	100.00%	96249	96159	98.00%	100%	2374	2374	100%
	IMRB	0.01%	56896	3	0.03%	185	718345	100%	2644	2643	188	2456	100.00%	100.00%	96249	96159	98.00%	100%	2374	2374	100%
Tata Docomo GSM	PMR	0.01%	15522	25	0.00%	730	2084207	100%	755	3	3	752	100.00%	96.00%	730202	702201	94.00%	100%	413	413	100%
	IMRB	0.01%	15522	25	0.00%	730	2084207	100%	755	3	3	752	100.00%	96.00%	730202	702201	94.00%	100%	413	413	100%
Aircel	PMR	0.02%	11109	2	0.01%	169	2797579	100%	169	169	169	30701	100.00%	100.00%	305434	271654	91.00%	100%	668	668	100%
	IMRB	0.02%	11109	2	0.01%	169	2797579	100%	169	169	169	30701	100.00%	100.00%	305434	271654	91.00%	100%	668	668	100%
Loop	PMR	0.00%	0	0	0.00%	0	722	0%	0	0	0	0	0.00%	100.00%	3	3	100.00%	0%	0	0	0%
	IMRB	0.00%	0	0	0.00%	0	722	0%	0	0	0	0	0.00%	100.00%	3	3	100.00%	0%	0	0	0%

Figures do not match with those reported in PMR

Figures verified on all India basis

B'mark = TRAI Benchmark, DNA = Details not available

Not meeting benchmark

8.0 Conclusions - Cellular Mobile services

1. Idea, BSNL, Reliance GSM and S Tel were not meeting the response time for customer assistance bench mark for number of calls answered by the operators (voice to voice) within 60 seconds per hundred calls.
2. S Tel was not meeting benchmark for accessibility of call center/ customer care
3. Aircel was not able to meet the benchmark for connection maintenance for worst affected cells having more than 3% TCH drop (call drop) rate.

9.0 Annexure - I

9.1 Service provider performance report based on one month data

Name of Service Provider	Network Availability		Connection Establishment (Accessibility)			Connection Maintenance (Retainability)			Metering and Billing				Response time to customer for assistance		Termination / closure of service	
	BTSs Accumulated downtime (not available for service)	Worst affected BTSs due to downtime	Call Set-up Success Rate (within licensee's own network)	SDCCH/ Paging Chl. Congestion	TCH Congestion	Call Drop Rate (%age)	Worst affected cells having more than 3% TCH drop	%age of connection with good voice quality	Metering and billing credibility (Postpaid)	Metering and billing credibility (Prepaid)	%age complaints resolved within 4 weeks	Period of applying credit/waiver less than 1 week	Accessibility of call centre/ customer care	Percentage of calls answered by operators within 60 sec	%age requests for Termination complied within 7 days	Refund of deposits after closure within 60 days
Benchmark	≤ 2%	≤ 2%	≥ 95%	≤ 1%	≤ 2%	≤ 2%	≤ 5%	≥ 95%	≤ 0.1%	≤ 0.1%	100%	100%	≥ 95%	≥ 90%	100%	100%
Idea	0.30%	1.93%	98.55%	0.05%	0.34%	0.56%	2.54%	97.09%	0.13%	0.00%	100.00%	100.00%	98.96%	93.77%	100.00%	100.00%
BSNL	0.80%	0.86%	98.31%	0.94%	1.69%	1.19%	2.77%	97.00%	0.02%	0.07%	100.00%	100.00%	100.00%	88.23%	100.00%	100.00%
Reliance CDMA	0.38%	0.00%	99.53%	0.00%	0.02%	0.85%	0.95%	98.81%	0.10%	0.05%	100.00%	100.00%	98.01%	94.95%	100.00%	100.00%
Reliance GSM	0.07%	0.00%	97.66%	0.06%	0.37%	0.62%	1.15%	98.06%	0.09%	0.03%	100.00%	100.00%	98.89%	99.67%	100.00%	100.00%
MTS	0.30%	0.00%	98.94%	0.00%	0.00%	1.54%	0.00%	98.24%	NA	0.00%	NA	NA	NA	NA	NA	NA
Airtel	0.19%	1.08%	98.98%	0.06%	0.16%	0.80%	2.19%	98.23%	0.02%	0.00%	100.00%	100.00%	100.00%	99.03%	100.00%	100.00%
Videocon	0.63%	0.00%	99.24%	0.28%	0.00%	1.85%	0.00%	98.75%	NA	0.00%	NA	NA	100.00%	98.40%	NA	NA
S Tel	0.17%	0.00%	98.82%	0.34%	0.18%	0.47%	3.06%	97.86%	NA	0.01%	100.00%	100.00%	95.00%	90.00%	NA	NA
Uninor	0.37%	0.32%	97.17%	0.90%	1.69%	1.90%	2.01%	95.62%	NA	0.00%	100.00%	100.00%	97.01%	91.19%	NA	NA
Vodafone	0.10%	0.12%	98.69%	0.29%	0.67%	1.07%	1.82%	98.36%	0.07%	0.04%	100.00%	100.00%	99.99%	99.28%	100.00%	100.00%
Tata Tele - CDMA	0.03%	0.00%	98.61%	0.00%	0.01%	0.74%	1.13%	99.13%	0.00%	0.01%	100.00%	100.00%	99.90%	97.12%	100.00%	100.00%
Tata Docomo GSM	0.01%	0.00%	99.15%	0.01%	0.10%	0.65%	1.57%	98.35%	0.00%	0.00%	100.00%	100.00%	97.02%	91.76%	100.00%	100.00%
Aircel	0.24%	1.63%	98.76%	0.11%	0.90%	1.33%	3.72%	96.14%	0.00%	0.00%	NA	100.00%	100.00%	98.01%	100.00%	20.00%
Loop	0.16%	0.00%	100.00%	0.17%	0.00%	0.26%	0.00%	97.45%	NA	0.00%	NA	NA	100.00%	100.00%	NA	NA

9.2 Monthly Point of Interconnection (POI) Congestion Report

Name of the Service Provider	Name of POI not meeting the benchmark	Total No. of circuits on POI	Total No. of call attempts on POI	Total traffic served on POI (Erlang)	% of Congestion POI	Action already taken/ action plan for meeting the benchmark
Idea	All POI's meeting TRAI specified benchmark					
BSNL	All POI's meeting TRAI specified benchmark					
Reliance CDMA	All POI's meeting TRAI specified benchmark					
Reliance GSM	All POI's meeting TRAI specified benchmark					
MTS	All POI's meeting TRAI specified benchmark					
Airtel	All POI's meeting TRAI specified benchmark					
Videocon	All POI's meeting TRAI specified benchmark					
S Tel	All POI's meeting TRAI specified benchmark					
Uninor	All POI's meeting TRAI specified benchmark					
Vodafone	All POI's meeting TRAI specified benchmark					
Tata Tele - CDMA	All POI's meeting TRAI specified benchmark					

Tata Docomo GSM	All POI's meeting TRAI specified benchmark
Aircel	All POI's meeting TRAI specified benchmark
Loop	All POI's meeting TRAI specified benchmark

9.3 Parameter wise performance reports for Cellular Mobile services

1. Network Availability

Audit Results for Network Availability

	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Number of BTSs in the licensed service area		1140	1987	735	1944	37	3688	40	1044	948	3338	469	1654	2570	9
Sum of downtime of BTSs in a month (in hours)		2562	11798	2052	946	83	5280	187.69	1338	2603	2550	91.72	99	4669	10.73
BTSs accumulated downtime (not available for service)	≤ 2%	0.30%	0.80%	0.38%	0.07%	0.30%	0.19%	0.63%	0.17%	0.37%	0.10%	0.03%	0.01%	0.24%	0.16%
Number of BTSs having accumulated downtime >24 hours		22	17	0	0	0	40	0	0	3	4	0	0	42	0
Worst affected BTSs due to downtime	≤ 2%	1.93%	0.86%	0.00%	0.00%	0.00%	1.08%	0.00%	0.00%	0.32%	0.12%	0.00%	0.00%	1.63%	0.00%

	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Number of BTSs in the licensed service area		1140	345	734	1959	37	3688	40	1044	948	3338	469	1664	2570	9
Sum of downtime of BTSs in a month (in hours)		322.2	74.9	80	80	15	437.04	0	111	593	241.72	3.63	6	581	0.13
BTSs accumulated downtime (not available for service)	≤ 2%	0.39%	0.30%	0.15%	0.06%	0.56%	0.16%	0.00%	0.15%	0.87%	0.10%	0.01%	0.01%	0.31%	0.02%
Number of BTSs having accumulated downtime >24 hours		3	0	0	0	0	2	0	0	0	0	0	0	1	0
Worst affected BTSs due to downtime	≤ 2%	0.26%	0.00%	0.00%	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.00%

2. Connection Establishment (Accessibility)

Audit Results for CSSR, SDCCH and TCH congestion

CSSR	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
CSSR	≥ 95%	98.55%	98.31%	99.53%	97.66%	98.94%	98.98%	99.24%	98.82%	97.17%	98.69%	98.61%	99.15%	98.76%	100.00%

SDCCH congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
SDCCH/Paging channel congestion	≤ 1%	0.05%	0.94%	0.00%	0.06%	0.00%	0.06%	0.28%	0.34%	0.90%	0.29%	0.00%	0.01%	0.11%	0.17%

TCH congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
TCH congestion	≤ 2%	0.34%	1.69%	0.02%	0.37%	0.00%	0.16%	0.00%	0.18%	1.69%	0.67%	0.01%	0.10%	0.90%	0.00%

Live measurement results for CSSR, SDCCH and TCH congestion

CSSR	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
CSSR	≥ 95%	99.46%	98.34%	99.52%	98.70%	98.65%	99.06%	98.89%	98.50%	98.51%	98.32%	99.00%	99.14%	99.18%	100.00%

SDCCH congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
SDCCH/Paging channel congestion	≤ 1%	0.03%	0.84%	0.00%	0.17%	0.00%	0.06%	0.18%	0.28%	0.01%	0.54%	0.00%	0.00%	0.23%	0.14%

TCH congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
TCH congestion	≤ 2%	0.09%	1.66%	0.03%	0.15%	0.00%	0.16%	0.11%	0.15%	0.03%	0.77%	0.00%	0.02%	0.88%	0.00%

Drive test results for CSSR (Average of three drive tests) and blocked calls

CSSR	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of call attempts		320	478	475	466	157	467	162	NA	496	505	473	478	492	NA
Total number of successful calls established		320	474	475	466	156	467	162	NA	496	499	473	478	492	NA
CSSR	≥ 95%	100.00%	99.16%	100.00%	100.00%	99.36%	100.00%	100.00%	NA	100.00%	98.81%	100.00%	100.00%	100.00%	NA

Blocked calls	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
%age blocked calls		0.00%	0.84%	0.00%	0.00%	0.64%	0.00%	0.00%	NA	0.00%	1.19%	0.00%	0.00%	0.00%	NA

3. Connection Maintenance (Retainability)

Audit Results for Call drop rate and for number of cells having more than 3% TCH

Call drop rate	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of calls established		24025030	215307274	12863930	58450455	4482	299976599	542	3649576	28912762	2809547	28805401	34392621	60862421	382
Total number of calls dropped		135137	2555441	109607	360093	69	2401790	10	17333	548630	30051	213221	223021	806901	1
Call drop rate	≤ 2%	0.56%	1.19%	0.85%	0.62%	1.54%	0.80%	1.85%	0.47%	1.90%	1.07%	0.74%	0.65%	1.33%	0.26%

Cells having more than 3% TCH	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of cells in the network		105648	938	2205	5832	111	11562	120	2123	2834	9951	1413	4971	7590	27
Total number of cells having more than 3% TCH		2683	26	21	67	0	253	0	65	57	181	16	78	282	0
Worst affected cells having more than 3% TCH	≤ 3%	2.54%	2.77%	0.95%	1.15%	0.00%	2.19%	0.00%	3.06%	2.01%	1.82%	1.13%	1.57%	3.72%	0.00%

Live measurement results for Call drop rate and for number of cells having more than 3% TCH

Call drop rate	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of calls established		26505793	18950880	17018563	70685605	5414	28381976	8984	46936	39842092	3180367	18709784	3774475	6614319	58
Total number of calls dropped		174444	194588	113779	337284	45	227270	51	243	674856	36797	111349	23993	104042	0
Call drop rate	≤ 2%	0.66%	1.03%	0.67%	0.48%	0.83%	0.80%	0.57%	0.52%	1.69%	1.16%	0.60%	0.64%	1.57%	0.00%

Cells having more than 3% TCH	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of cells in the network		245808	941	2202	5877	111	11579	120	2123	2834	9951	1413	5001	7586	27
Total number of cells having more than 3% TCH		7162	28	20	16	0	254	0	43	81	185	11	77	335	0
Worst affected cells having more than 3% TCH	≤ 3%	2.91%	2.98%	0.91%	0.27%	0.00%	2.19%	0.00%	2.03%	2.86%	1.86%	0.78%	1.54%	4.42%	0.00%

Drive test results for Call drop rate (Average of three drive tests)

Call drop rate	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of calls established		320	473	475	466	156	467	162	NA	496	500	473	476	489	NA
Total number of calls dropped		0	1	0	0	0	0	0	NA	0	5	0	0	0	NA
Call drop rate	≤ 2%	0.00%	0.21%	0.00%	0.00%	0.00%	0.00%	0.00%	NA	0.00%	1.00%	0.00%	0.00%	0.00%	NA

4. Voice quality

Audit & Live measurement Results for Voice quality

Voice quality	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of sample calls		3890196000	31324	44783411	4283865587	4482	44722606929	93954	NA	68152860449	473351371	11863	15310167509	7391716103	15900
Total number of calls with good voice quality		3777124528	30384	44249142	4200840374	4403	43931016671	92775	NA	65168420214	465581990	11760	15058155772	7106602320	15494
%age calls with good voice quality	≥ 95%	97.09%	97.00%	98.81%	98.06%	98.24%	98.23%	98.75%	97.86%	95.62%	98.36%	99.13%	98.35%	96.14%	97.45%

Voice quality	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of sample calls		373914717	47072	50321833	5464223391	5414	4589200071	735729	NA	6479212596	512312263	9673	1434745375	787535392	2477
Total number of calls with good voice quality		363450480	46130	49754640	5377534247	5283	4500386452	700951	NA	6188729154	502511985	9620	1407307859	756868097	2442
%age calls with good voice quality	≥ 95%	97.20%	98.00%	98.87%	98.41%	97.58%	98.06%	95.27%	98.00%	95.52%	98.09%	99.45%	98.09%	96.11%	98.59%

Drive test results for Voice quality (Average of three drive tests)

Voice quality	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of sample calls		684724	871921	20675	25099	2952235	200396	222574	NA	897312	917853	106948	718273	532611	NA
Total number of calls with good voice quality		684724	839889	20589	24470	2952235	196613	217372	NA	843311	895242	100977	710541	518632	NA
%age calls with good voice quality	≥ 95%	100.00%	96.33%	99.58%	97.49%	100.00%	98.11%	97.66%	NA	93.98%	97.54%	94.42%	98.92%	97.38%	NA

5. POI Congestion

Audit Results for POI Congestion

POI congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of working POIs		67	17	22	23	26	57	12	44	60	44	36	12	86	13
No. of POIs not meeting benchmark		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capacity of all POIs (A) - in erlangs		779580.4	25000	686727.7	771463.5	539.83	157681	284.69	11346.74	20252.06	74996	933589	178145.85	49792	313
Traffic served for all POIs (B)- in erlangs		473609.12	23002.11	257416.3	488992.8	3.02	106943	9.78	2844.02	14507.91	43345	451192	100940.23	28781	14.17
POI congestion	≤ 0.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Live measurement results for POI congestion

POI congestion	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of working POIs		64	17	22	23	26	57	12	44	60	42	36	12	85	13
No. of POIs not meeting benchmark		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capacity of all POIs (A) - in erlangs		1842249.5	25000	57619.7	90374.14	539.83	21541	284.69	11346.74	21918.43	73510.46	89277.58	17345.17	53031.42	313.3
Traffic served for all POIs (B)- in erlangs		458396.25	22243.76	20372.5	62879.12	1.8	13817	64.21	2844.02	15897.31	46431.49	47211.8	8554.29	32156.11	0.58
POI congestion	≤ 0.5%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

6. Inter Operator Call Assessment

Inter operator call Assessment To↓ From→	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Idea	NA	100%	100%	100%	99%	100%	100%	99%	100%	100%	100%	100%	100%	100%
BSNL	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance CDMA	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Reliance GSM	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	99%	100%
MTS	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%	100%
Airtel	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	100%	100%
Videocon	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%	99%
S Tel	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	100%	100%
Uninor	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	100%	99%
Vodafone	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%	99%
Tata Tele - CDMA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%	100%	100%

Tata Docomo GSM	100%	100%	100%	100%	99%	100%	99%	99%	100%	100%	100%	NA	100%	100%	
Aircel	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	99%	
Loop	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	NA	

☐ The maximum problem faced by the calling operator to other operators

7. Metering and Billing credibility

Audit Results for billing performance

Billing Performance	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Billing disputes - Postpaid															
Total bills generated during the period		2245	57249	33822	10581	0	25847	0	0	0	20400	29238	8148	6182	0
Total number of bills disputed		3	9	33	10	0	5	0	0	0	15	0	0	0	0
Percentage bills disputed	≤ 0.1%	0.13%	0.02%	0.10%	0.09%	NA	0.02%	NA	NA	NA	0.07%	0.00%	0.00%	0.00%	NA
Billing disputes - Prepaid															
Number of complaints related to charging, credit & validity		44	2852	385	1338	0	181	0	102	31	1064	60	1	2	0
Total number of prepaid customers in that period		974508	4097969	774270	3881212	452	7064255	10670	833665	1347034	2496448	490503	2330261	2931079	966
Percentage of complaints	≤ 0.1%	0.00%	0.07%	0.05%	0.03%	0.00%	0.00%	0.00%	0.01%	0.00%	0.04%	0.01%	0.00%	0.00%	0.00%
Resolution of billing complaints															
Total number of billing/charging complaints		47	2861	418	1348	0	186	0	102	31	1079	60	1	2	0
Total complaints considered invalid		365	2803	129	398	0	3507	0	1	19	92	1319	202	684	0
Number of complaints resolved in 4 weeks from date of receipt for complaints listed in 5.3.1		47	2861	418	1348	0	186	0	102	31	1079	60	1	2	0
Percentage complaints resolved within 4 weeks of date of receipt	100%	100%	100%	100%	100%	NA	100%	NA	100%	100%	100%	100%	100%	NA	NA
Period of applying credit / waiver															
Total number of complaints where credit/waiver is required		47	58	418	1348	0	186	0	101	12	987	60	1	2	0
Percentage cases in which credit/waiver was received within 1 week	100%	100%	100%	100%	100%	NA	100%	NA	100%	100%	100%	100%	100%	100%	NA

Live calling results for resolution of billing complaints

Resolution of billing complaints	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total Number of calls made		100	100	100	100	NA	100	NA	100	100	100	100	100	100	NA
Number of cases resolved in 4 weeks		99	99	98	99	NA	100	NA	98	100	100	99	100	99	NA
Percentage cases resolved in four weeks	100%	99%	99%	98%	99%	NA	100%	NA	98%	100%	100%	99%	100%	99%	NA

8. Customer Care

Audit results for customer care

Customer Care Assessment	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of call attempts to customer care for assistance		114352	1746600	312700	4059130	0	1348005	279	DNA	834622	2905583	40200	237696	2724535	5
Number of calls getting connected and answered (electronically)		113162	1746600	306489	4014128	0	1347989	279	DNA	809678	2905321	40159	230613	2724535	5
Percentage calls getting connected and answered	≥ 95%	98.96%	100.00%	98.01%	98.89%	NA	100.00%	100.00%	95.00%	97.01%	99.99%	99.90%	97.02%	100.00%	100.00%
Number of calls getting transferred to the operator (voice to voice)		306835	707255	49044	984265	0	1852566	187	DNA	236666	894425	96955	597858	1066705	5
Number of calls answered by operator (voice to voice) within 60 seconds		287733	624032	46568	980978	0	1834540	184	DNA	215804	887975	94160	548609	1045476	5
Percentage calls answered within 60 seconds (V2V)	≥ 90%	93.77%	88.23%	94.95%	99.67%	NA	99.03%	98.40%	90.00%	91.19%	99.28%	97.12%	91.76%	98.01%	100.00%

Live measurement results for customer care

Customer Care Assessment	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of call attempts to customer care for assistance		10590	232716	29842	329910	0	132406	31	DNA	86744	249360	4062	21211	272811	0
Number of calls getting connected and answered (electronically)		10492	232716	29278	326113	0	132406	31	DNA	83285	249199	4053	20445	272811	0
Percentage calls getting connected and answered	≥ 95%	99.07%	100.00%	98.11%	98.85%	NA	100.00%	100.00%	95.00%	96.01%	99.94%	99.78%	96.39%	100.00%	NA
Number of calls getting transferred to the operator (voice to voice)		27925	103671	4879	119749	0	183896	20	DNA	26269	74724	7762	48297	97941	0
Number of calls answered by operator (voice to voice) within 60 seconds		23605	86111	4646	119350	0	182214	20	DNA	25379	74323	7461	47682	95018	0
Percentage calls answered within 60 seconds (V2V)	≥ 90%	84.53%	83.06%	95.22%	99.67%	NA	99.09%	100.00%	90.00%	96.61%	99.46%	96.12%	98.73%	97.02%	NA

Live calling results for customer care

Customer Care Assessment	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total Number of calls received		100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Number of calls getting connected and answered		100	100	100	100	100	100	100	100	100	100	100	100	100	100
Percentage calls getting connected and answered	≥ 95%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Live calling results for customer care (Voice to Voice)

Customer Care Assessment	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total Number of calls received		100	100	100	100	100	100	100	100	100	100	100	100	100	100
Total Number of calls answered within 60 seconds		100	98	97	99	99	99	98	99	100	99	100	99	99	100
Percentage calls answered within 60 seconds	≥ 90%	100.00%	98.00%	97.00%	99.00%	99.00%	99.00%	98.00%	99.00%	100.00%	99.00%	100.00%	99.00%	99.00%	100.00%

Operator	Customer Care No.	Operator	Customer Care No.
Reliance CDMA	9861098610	MTS	155155
Idea	198, 9090012345	Airtel	121
Aircel	121, 9854012345	Tata CDMA	12524
Vodafone	198	Tata DoCoMo	121
Reliance GSM	198	Loop	121
STel	1212	Videocon	121
Uninor	121	BSNL	1503

9. Termination / closure of service

Audit results for termination / closure of service

Termination	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of closure request		17	34	54	17	0	106	0	0	0	23	602	135	14	0
Number of requests attended within 7 days		17	34	54	17	0	106	0	0	0	23	602	135	14	0
Percentage cases in which termination done within 7 days	100%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	NA	NA	100.00%	100.00%	100.00%	100.00%	NA

Audit results for refund of deposits

Refund	Benchmark	Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total number of cases requiring refund of deposits		17	78	141	53	0	20	0	0	0	7	55	7	15	0
Total number of cases where refund was made within 60 days		17	78	141	53	0	20	0	0	0	7	55	7	3	0
Percentage cases in which refund was receive within 60 days	100%	100.00%	100.00%	100.00%	100.00%	NA	100.00%	NA	NA	NA	100.00%	100.00%	100.00%	20.00%	NA

11. Additional Network Related parameters															
Audit Results for Total Traffic Handled in Erlang															
Traffic in Erlang		Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Equipped capacity of the network		29075.05	16000	83000	72000	4200	247252.31	5000	16203.5	32339	88754	110987	81176	138666	199.85
Total traffic handled in erlang during TCBH		18591.49	15953.17	16924.94	64521.02	3.46	198206.3	1.82	2959.86	28297	67223	22484	28050	43663	11.63

Total number of customers as per VLR															
		Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total no. of customers served (as per VLR)		626545	408126	419273	2334267	475	5683659	109	173586	637622	2118703	274446	1021386	1401294	13

Level 1 services		Idea	BSNL	Reliance CDMA	Reliance GSM	MTS	Airtel	Videocon	S Tel	Uninor	Vodafone	Tata Tele - CDMA	Tata Docomo GSM	Aircel	Loop
Total no. of calls made		150	150	150	150	150	150	150	150	150	150	150	150	150	150
Calls answered in 60 sec		150	150	150	150	150	150	150	150	150	150	150	150	150	150
Calls answered after 60 sec		0	0	0	0	0	0	0	0	0	0	0	0	0	0

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